

## **APPENDIX I: Geolight Proprietary Tank Details**

# SDS

Water  
Infrastructure  
Systems

INNOVATORS IN  
WATER TECHNOLOGY

## SDS GEOLight®

Stormwater Management System



SDS GEOLight® is an ultra lightweight honeycombed modular structure, made from recycled PVC, that provides an underground storage facility for the application of stormwater attenuation or infiltration.

SDS  
Water  
Infrastructure  
Systems

## Stormwater Management

The Environment Agency is keen to promote the wider use of sustainable drainage systems, which reduce the impact of surface water runoff. There are two main ways of storing surface water for stormwater management:

- Stormwater attenuation tanks
- Soakaway infiltration systems

### Stormwater Attenuation Systems

This consists of underground water storage facilities that hold excess water during periods of peak rainfall.

The stored water is gradually released in a controlled manner into the surface water drainage system or directly into watercourses, reducing the risk of upstream and downstream flooding.

### Soakaway Infiltration Systems

Soakaways are designed to store surface water runoff until it can be gradually absorbed by the surrounding ground.

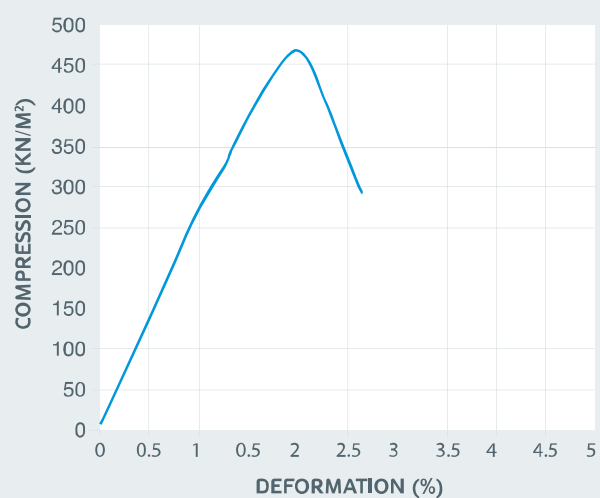
**SDS GEOLight® –an efficient and economic solution for stormwater management.**

## SDS GEOLight® Attenuation

**SDS GEOLight® has been specifically designed to form underground water storage reservoirs in stormwater management schemes. Its honeycombed structure gives it certain unique characteristics that make it ideal for this purpose:**

- The high void rate (95%) of GEOLight® means that the maximum volume of water is stored in the minimum volume of storage unit.
- High compressive strength. GEOLight® is available in two strengths as standard: 200 and 400kN/m<sup>2</sup>. Note: Higher compressive strengths available from 600 to 1000 kN/m<sup>2</sup>. The graph on the right shows the results of a compression test, where samples of GEOLight® 400 were compressed at the rate of 1mm per minute. The deformation at 400kN/m<sup>2</sup> is about 1.6%.

RESULTS OF COMPRESSION TEST ON SDS GEOLIGHT® 400



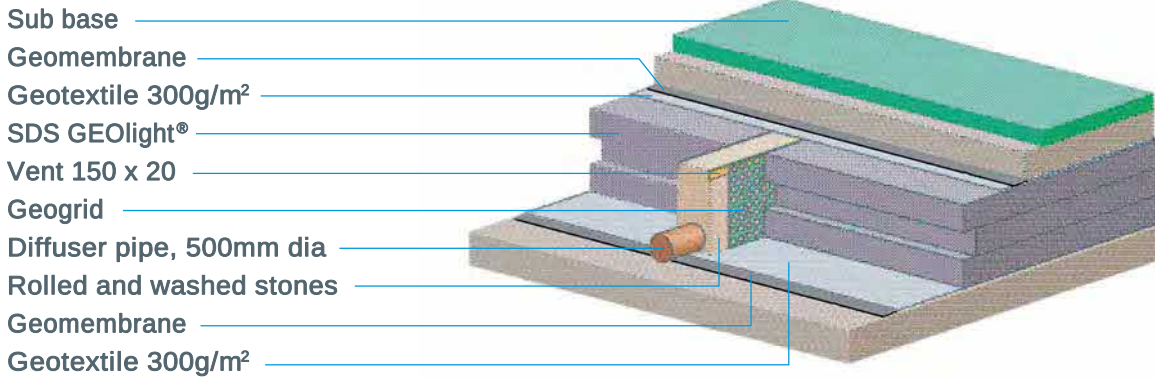
The GEOLight® Stormwater Attenuation System consists of two manholes (inspection chambers) connected by a length of perforated distribution pipe which feeds the stormwater storage reservoirs on either side formed from GEOLight®.

The distribution pipe is normally from 225mm up to 500mm diameter, generally covered in a trench that is filled with draining material such as 15/25 clean graded stone, free from fines.

The reservoirs and distribution pipe are wrapped in a waterproof membrane, such as butyl, to prevent seepage of water into the surrounding ground. The top of each GEOLight® reservoir has a vent which is connected back to the upstream manhole.

A geotextile or 10mm mesh geogrid is laid between the distribution pipe and GEOLight® to prevent the GEOLight® units being clogged by the draining materials.

## SDS GEOLight® Attenuation



### How does it work?

- 1. In normal conditions, water enters a back drop manhole. This is the upstream manhole and any silt or sediment will collect in the bottom of the chamber. The water then flows along the distribution pipe into the downstream manhole. The upstream pipework is sized to cope with normal flow conditions. The distribution pipe and attenuation tank are sized to cope with storm conditions. The outflow pipe is sized to cope with the permissible discharge.
- 2. In storm conditions the flow restrictor (vortex flow control or orifice plate) in the downstream manhole limits the amount of water flowing out of the manhole. This causes the water level in the distribution pipe to rise and water to spill into the GEOLight® reservoirs on either side. As the water level rises in the reservoirs, air is forced out of the high level vents into the upstream manhole.

- 3. Once the storm has passed, the water level in the GEOLight® reservoirs gradually falls as water passes through the flow restrictor in the downstream manhole. The vents now allow air to return into the GEOLight® reservoirs. Gradually the reservoirs empty. The flow restrictor prevents excess surges of flood water to pass downstream and uses the storage reservoirs to store the water for the period of the storm.

### Calculating the storage capacity

The storage capacity of the GEOLight® reservoirs is determined by the maximum outflow permitted, (set by the water company or Environment Agency), the impermeable area of the site and the rainfall return period –normally 1 in 30 years, but again can be dictated by the water company. A full design service, including calculations, can be supplied via a third party consultant. **Please contact SDS for details.**

### Other uses

**The water storage ability of SDS GEOLight® lends itself to a number of other uses:**

- Water recycling combines with irrigation systems –this is increasingly popular: GEOLight® is used to retain stormwater which is then pumped as required to a network of standpipes for irrigation.
- Drainage channels –the natural permeability of GEOLight® lends itself for use as an underground drainage channel that collects and drains away groundwater.
- Pollution control –improved water runoff quality. When used in combination with oil / petrol separators, GEOLight® can replenish groundwater without the risk of contamination from oil, chemicals or suspended solids.
- To form lightweight embankments (slope stabilisation) - GEOLight® can be used to quickly form the base of embankments that only weigh a fraction of earth embankments.

# Stormwater Attenuation System

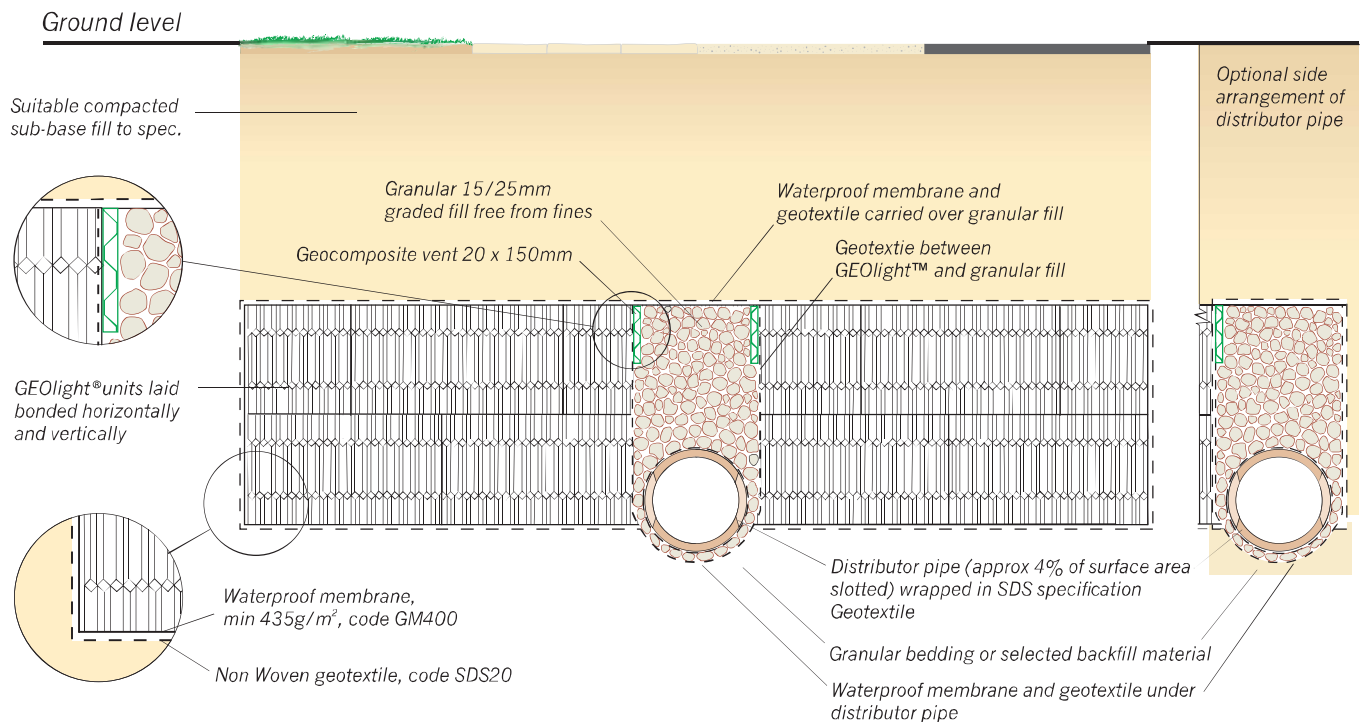
## Design Details

The details on these two pages illustrate the construction of a typical SDS GEOLight® Stormwater Attenuation System. The length and height of the GEOLight® reservoirs is determined by the quantity of water to be stored.

The layout of each scheme is specifically designed to suit the characteristics and limitation of the site. Typically the distributor pipe would be arranged in the centre of the reservoir, but can alternatively be placed at the side where topographical constraints dictate.

The high performance waterproof membrane should be sealed continuously to encapsulate the GEOLight® reservoirs, distributor pipe and granular fill. It is protected by a heavyweight needle punched, non woven geotextile. To help with maintenance a high flow geotextile is placed between the granular fill and GEOLight® attenuation units to prevent silt and particles being washed into the reservoir. GEOLight® can be used under a range of surfaces e.g. grass, porous paving, standard paving block, tarmac and concrete.

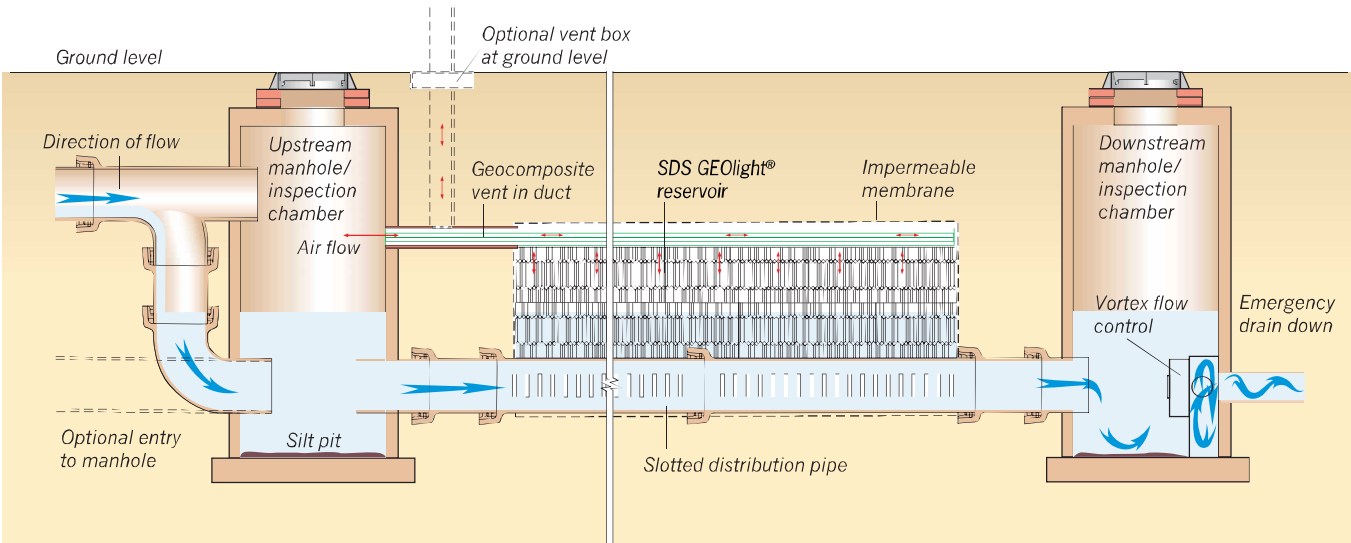
## Cross Section



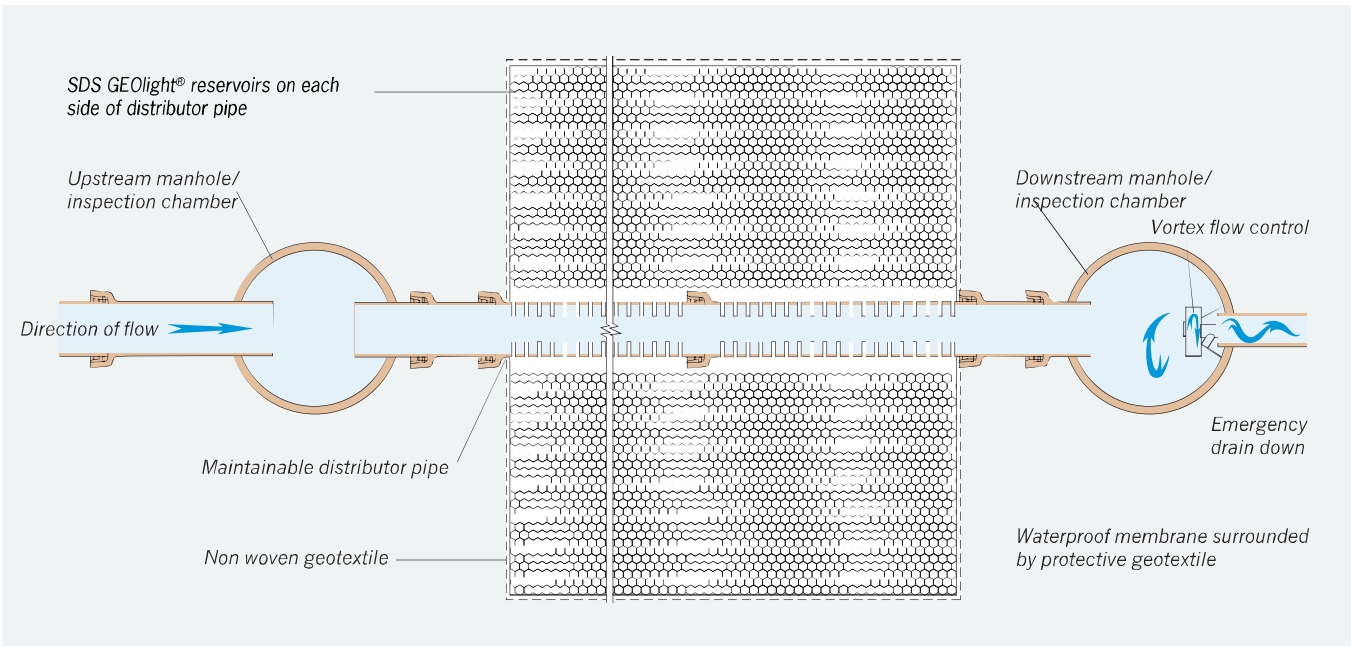
# Stormwater Attenuation System

## Design Details

### Long Section



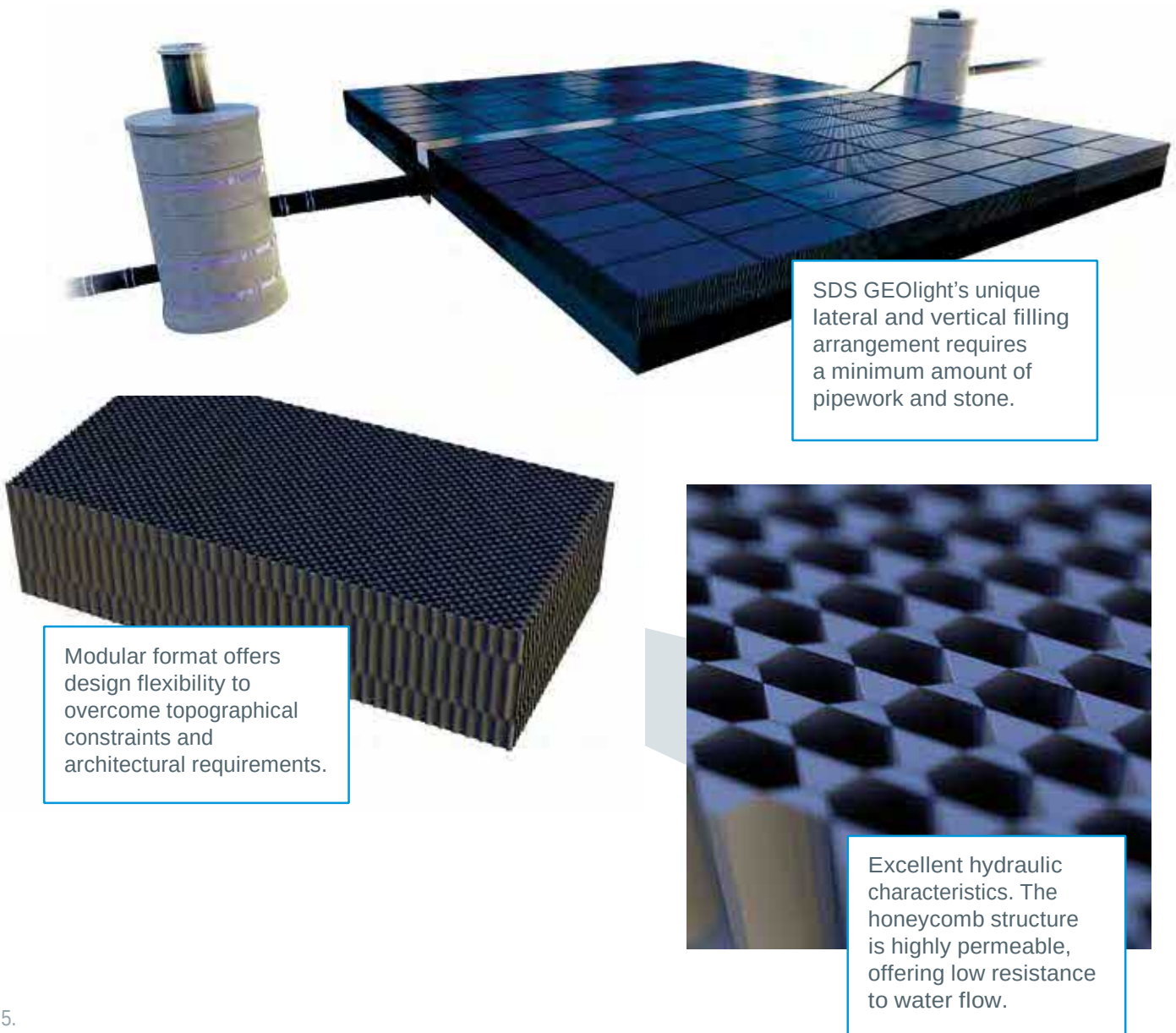
### Plan



## Benefits

- High compressive strength –can be located under all roads, car parks and amenity area surfaces.
- Reduced excavation costs –the very high void rate (95%) minimises the required volume of earthworks.
- Speed of installation –1000m<sup>3</sup> reservoir, completed in one week.
- Light and easy to handle.
- Depth of tank invert reduced by using patented lateral supply.
- Simplified distribution pipe network, easy maintenance –dispensing with costly and complicated pipework configurations.
- Greatly reduces the risk of flooding when used as stormwater storage.
- Can also be used for water recycling and combining with irrigation systems.
- Can virtually eliminate pollution when used in combination with specialist petrol / oil separators.
- Design service available, including calculations.

## GEOLight® block



# COSHH and Handling Information

## 1. COMPOSITION/INFORMATION ON INGREDIENTS:

### Hazardous ingredients:

None as finished goods or products.

### Types of materials:

Polyvinyl chloride (PVC)  
MEK

## 2. HAZARDS IDENTIFICATION

### Nature of hazard:

There are no health risks from the products during normal use. The products may contain various pigment colours and stabilisers that may be toxic. The chemicals are, however, bound within the product material and not easily extracted.

## 3. FIRST-AID MEASURES

### Eye contact:

Plastic materials may cause physical irritation in the eyes. Wash out with large amounts of water. If irritation persists, seek medical advice.

### Skin contact:

Not applicable.

### Inhalation:

Not applicable.

### Ingestion:

Not expected to have any toxic effects.

## 4. FIRE-FIGHTING MEASURES

### Extinguishing media:

On small fires use any hand-held extinguisher type.  
On large fires use water.

### Fire and explosion hazards:

Melting plastics may flow and spread in a large fire.  
Products of fire will be thick black toxic smoke.

### Material characteristics:

PVC products will burn in the presence of a flame but are classed as self-extinguishing.

### Protective equipment:

Wear self-contained breathing apparatus and protective clothing.

## 5. HANDLING AND STORAGE

### Handling:

There are no hazards associated with the finished products. However, when cutting SDS GEOLight®, we recommend that the correct tools are used e.g. Handsaw or Alligator saw. When cutting, dust may be created; avoid inhaling these dusts. Take care of heat build-up within materials during cutting etc. The pallets of SDS GEOLight® units should be placed on level ground and should not be stacked on site. The maximum weight of the pallet of SDS GEOLight® units as delivered to site is 650kg (700kg on one copy), including packaging. Machines used to lift the pallet should be able to lift this weight safely. Loose individual units should not be stored more than three units high. SDS GEOLight® units are lightweight ranging from 23kg to 55kg and can be easily handled –one or two person lift.

### Storage:

SDS GEOLight® units will resist the effects of UV light for up to six months; however, prolonged storage in direct sunlight should be avoided. SDS GEOLight® units should not be stored near to any fuel storage areas or any other solvents. SDS GEOLight® units are very robust and resistant to damage during normal handling; however, they should be secured in areas where impacts from vehicles or construction plant will be avoided.

### Material characteristics:

PVC products will burn in the presence of a flame but are classed as self-extinguishing.

### Protective equipment:

Wear self-contained breathing apparatus and protective clothing.

## 6. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Respiratory protection:

Not required under normal conditions of use. Where cutting etc. creates dust, wear a disposable half-mask to the standard FFP2S.

### Hand protection:

Wear impervious strong gloves to prevent cuts to the hands while handling, cutting etc.

### Eye protection:

Wear safety glasses when cutting etc.

### Skin protection:

Wear overalls.

## 7. SITE HAZARDS

### Other hazards for consideration:

Working in excavations and trenches –SDS GEOLight® may be designed with a shallow invert for infiltration (soakaway) or attenuation (storage) system. This negates the need for deep excavations or trenches, excavation near services e.g. gas, electricity or contaminated soil areas. N.B. All risk assessments should be undertaken by the main contractor for forklift, access to and working in excavations and trench support.

## 8. STABILITY AND REACTIVITY

### Decomposition products:

Major thermal decomposition products are oxides of carbon. Relevant differences are (in addition): PVC may produce amounts of Hydrogen Chloride.

### Stability:

These materials are stable at temperatures up to normal operating limits (moulding parameters).

## 9. ECOLOGICAL INFORMATION

### Biodegradability:

Plastic products are not readily biodegradable but are not detrimental to terrestrial wildlife.

### Aquatic toxicity:

Non-toxic to marine life.

## 10. DISPOSAL CONSIDERATIONS

### Method:

The preferred method of disposal is collection and recycling. Plastics can safely be placed with regular industrial or household wastes where recycling is not available.

## 11. OTHER INFORMATION

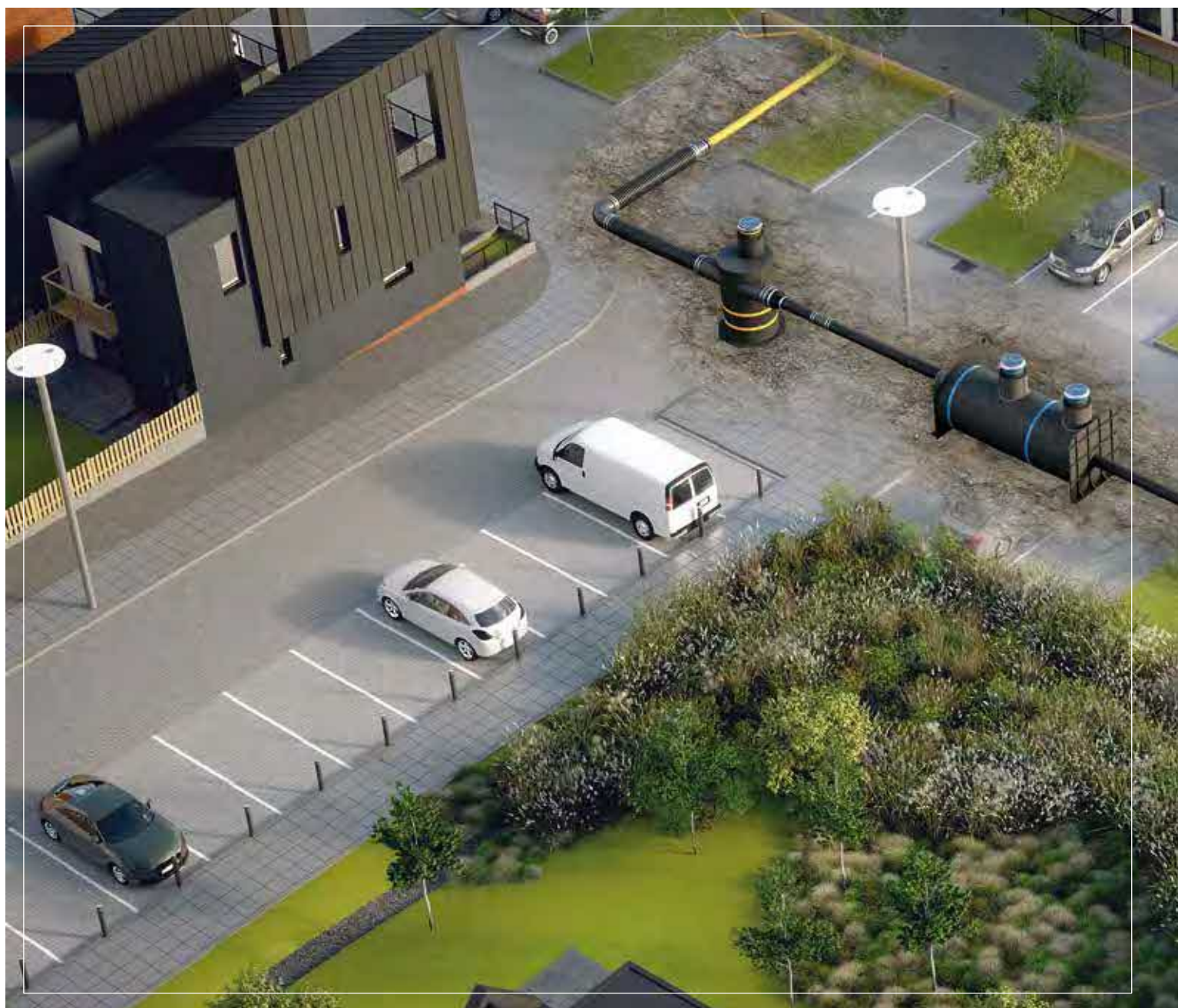
As the handling, storage, use and disposal of the product are beyond our control SDS disclaims all liability for loss, damage, injury or expense in any way connected with such activities and further makes no warranties, expressed or implied, as to the suitability of the product for any particular use.

The preferred method of disposal is collection and recycling. Plastics can safely be placed with regular industrial or household wastes where recycling is not available.

# SDS

Water  
Infrastructure  
Systems

## INNOVATORS IN WATER TECHNOLOGY



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## APPENDIX J: Vortex Flow Control Chamber Details

# RID GISTO RM Check Vortex Flow Control Chambers

Data Sheet

Where flows within a drainage system are required to be limited (i.e. prior to discharge from site), with improved hydraulic performance and reduced maintenance, we are able to offer our RIDGISTORMCheck Vortex Flow Control Chamber.

Pre-fabricated under factory controlled conditions, the RIDGISTORMCheck Chamber is available in a range of diameters from 1050-3000mm and incorporates a vortex flow control unit, fitted onto a preformed headwall. Each vortex flow control unit is manufactured to suit the unique hydraulic characteristics of the site's drainage system design. RIDGISTORMCheck Vortex Flow Control Chambers are typically supplied as a single unit, allowing simple installation and eliminating a number of construction risks associated with in-situ construction. When installed in conjunction with our range of pipe systems, they offer a fully integrated drainage system.



## Applications

Site specific RIDGISTORMCheck Vortex Flow Control Chambers are engineered to suit a range of stormwater systems, providing a hydraulically efficient means of flow regulation that does not use moving parts or require power to operate.

## Key Features and Benefits

- Self-activating vortex flow controller which controls forward flow of water
- No moving parts - virtually maintenance free
- Manufactured with an integral sump for silt catchment/removal
- Can be manufactured to adoptable standards
- Multiple inlet and outlet options, allowing quick and seamless connection to pipelines
- Depths can be tailored to suit project requirements
- Optional integral benching
- Optional step rungs to BS EN 13101 and ladders to BS EN 14396
- Optional riser section and riser location ring
- Integral lifting points available on request to improve Health and Safety during handling and installation
- Stub connections and rocker pipes are available
- Manufactured in a factory controlled environment for improved quality of finish
- Eliminates wastage associated with in-situ construction

## Other fabrications in our RIDGISTORMCheck range:

- Orifice Plate Flow Control Chambers

## Performance

RIDGISTORMCheck Vortex Flow Control Chambers are fabricated from Ridgistorm-XL pipework, which is manufactured to meet the material requirements of BS EN 13476.

| RIDGISTORMCHECK VORTEX FLOW CONTROL CHAMBER |                                                                                           |
|---------------------------------------------|-------------------------------------------------------------------------------------------|
| PHYSICAL PROPERTIES                         |                                                                                           |
| Diameter                                    | 1050-3000mm                                                                               |
| Depth                                       | To suit requirements                                                                      |
| Material                                    | HDPE                                                                                      |
| Colour                                      | Black with Blue Interior                                                                  |
| Flow control units                          | Grade 304 Stainless Steel                                                                 |
| Chemical resistance                         | HDPE is naturally resistant to most chemicals associated with stormwater drainage systems |
| Inlets/outlets                              | 100-3000mm                                                                                |
| Hydraulic performance                       | Unit manufactured to suit site specific conditions                                        |

## Our Ridgistorm-XL Fabrications range

All of our Ridgistorm-XL fabrications are tailor-made, fully-welded, watertight structured wall chambers to suit project-specific requirements. Health and Safety benefits become apparent during handling and installation, due to our fabrications' strong but light in weight nature. In addition, off-site construction ensures uncompromised, high quality products being delivered to site ready-to-install, reducing installation time and costs.



# RID GISTO RM Check Vortex Flow Control Chambers

Data Sheet

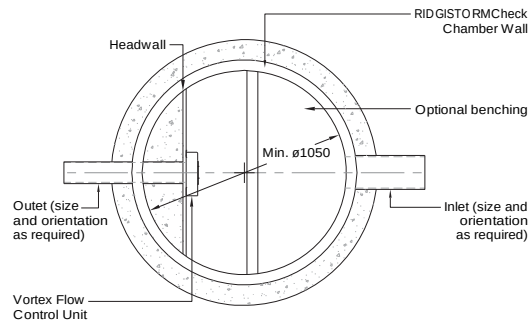
## PRODUCT INFORMATION

P2

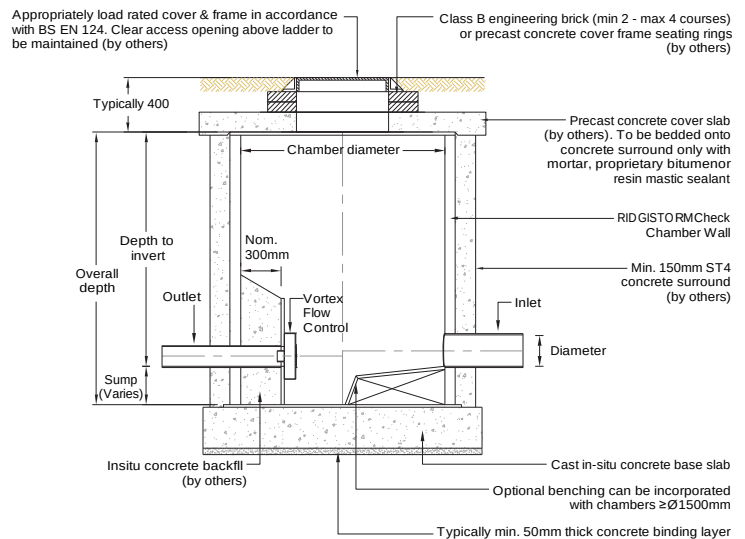
ISSUE 2 - MAR 2019

### Non-Bypass Chamber

For sites where discharge rates must be guaranteed to not exceed a prescribed limit(s).

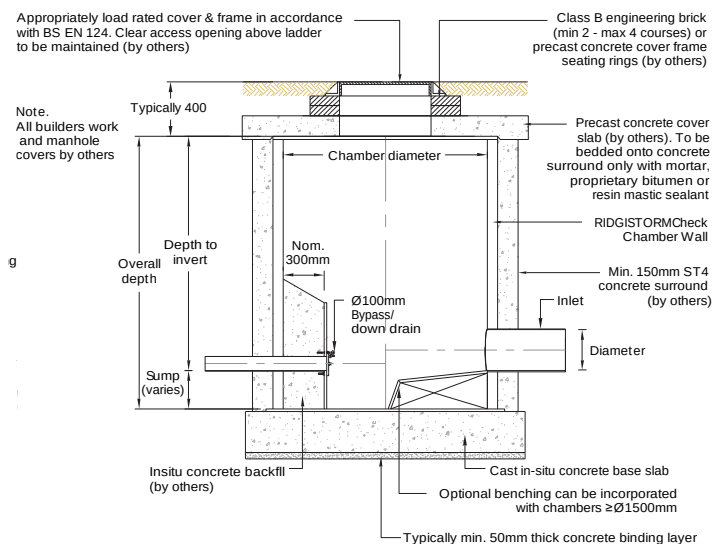
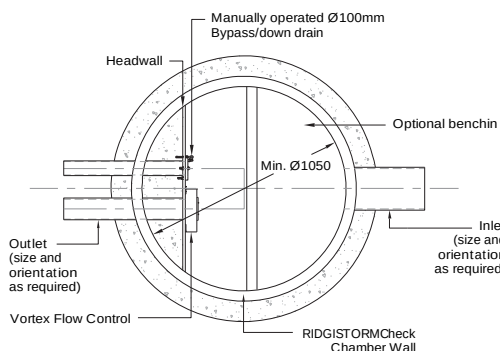


Note.  
All builders work and  
manhole covers by others



### Manual Bypass Design

The manual bypass design offers a bypass the ability to flow control device to facilitate maintenance. Manually operated from the surface, the activation of the bypass system opens a door in the head wall allowing water in the chamber to drain down via the bypass pipe.



For further information please contact our Technical Team on +44 (0) 1509 615100 or download our CAD Standard Details from our website [www.polypipe.com/civils-technical-hub](http://www.polypipe.com/civils-technical-hub)

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**APPENDIX K: Bypass Separator Details**

# SEPARATORS

A RANGE OF FUEL/OIL SEPARATORS  
FOR PEACE OF MIND



***Klargester***

The Klargester logo is a blue triangle pointing to the right, containing three white wavy lines representing water. The word "Klargester" is written in a red, italicized, sans-serif font across the middle of the triangle.

**60** YEARS OF  
Expertise &  
Innovation  
1955-2015

A blue wavy line graphic, similar to the one in the Klargester logo, is positioned below the text.

# Bypass NSB RANGE

## APPLICATION

Bypass separators are used when it is considered an acceptable risk not to provide full treatment, for very high flows, and are used, for example, where the risk of a large spillage and heavy rainfall occurring at the same time is small, e.g.

- Surface car parks.
- Roadways.
- Lightly contaminated commercial areas.

## PERFORMANCE

Klargester were one of the first UK manufacturers to have separators tested to EN 858-1. Klargester have now added the NSB bypass range to their portfolio of certified and tested models. The NSB number denotes the maximum flow at which the separator treats liquids. The British Standards Institute (BSI) tested the required range of Kingspan Klargester Bypass separators and certified their performance in relation to their flow and process performance assessing the effluent qualities to the requirements of EN 858-1. Klargester bypass separator designs follow the parameters determined during the testing of the required range of bypass separators.

Each bypass separator design includes the necessary volume requirements for:

- Oil separation capacity.
- Oil storage volume.
- Silt storage capacity.
- Coalescer.

The unit is designed to treat 10% of peak flow. The calculated drainage areas served by each separator are indicated according to the formula given by PPG3 NSB = 0.0018A(m<sup>2</sup>). Flows generated by higher rainfall rates will pass through part of the separator and bypass the main separation chamber.

Class I separators are designed to achieve a concentration of 5mg/litre of oil under standard test conditions.



## FEATURES

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Oil alarm system available (required by EN 858-1 and PPG3).
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- GRP or rotomoulded construction (subject to model).

To specify a nominal size bypass separator, the following information is needed:-

- The calculated flow rate for the drainage area served. Our designs are based on the assumption that any interconnecting pipework fitted elsewhere on site does not impede flow into or out of the separator and that the flow is not pumped.
- The drain invert inlet depth.
- Pipework type, size and orientation.

## SIZES AND SPECIFICATIONS

| UNIT<br>NOMINAL<br>SIZE | FLOW<br>(l/s) | PEAK FLOW<br>RATE (l/s) | DRAINAGE<br>AREA (m <sup>2</sup> ) | STORAGE<br>CAPACITY (litres) |      | UNIT<br>LENGTH (mm) | UNIT DIA.<br>(mm) | ACCESS<br>SHAFT<br>DIA. (mm) | BASE TO<br>INLET INVERT<br>(mm) | BASE TO<br>OUTLET<br>INVERT | STANDARD<br>FALL ACROSS<br>(mm) | MIN. INLET<br>INVERT<br>(mm) | STANDARD<br>PIPEWORK<br>DIA. |
|-------------------------|---------------|-------------------------|------------------------------------|------------------------------|------|---------------------|-------------------|------------------------------|---------------------------------|-----------------------------|---------------------------------|------------------------------|------------------------------|
| NSBP003                 | 3             | 30                      | 1670                               | 300                          | 45   | 1700                | 1350              | 600                          | 1420                            | 1320                        | 100                             | 500                          | 160                          |
| NSBP004                 | 4.5           | 45                      | 2500                               | 450                          | 60   | 1700                | 1350              | 600                          | 1420                            | 1320                        | 100                             | 500                          | 160                          |
| NSBP006                 | 6             | 60                      | 3335                               | 600                          | 90   | 1700                | 1350              | 600                          | 1420                            | 1320                        | 100                             | 500                          | 160                          |
| NSBE010                 | 10            | 100                     | 5560                               | 1000                         | 150  | 2069                | 1220              | 750                          | 1450                            | 1350                        | 100                             | 700                          | 315                          |
| NSBE015                 | 15            | 150                     | 8335                               | 1500                         | 225  | 2947                | 1220              | 750                          | 1450                            | 1350                        | 100                             | 700                          | 315                          |
| NSBE020                 | 20            | 200                     | 11111                              | 2000                         | 300  | 3893                | 1220              | 750                          | 1450                            | 1350                        | 100                             | 700                          | 375                          |
| NSBE025                 | 25            | 250                     | 13890                              | 2500                         | 375  | 3575                | 1420              | 750                          | 1680                            | 1580                        | 100                             | 700                          | 375                          |
| NSBE030                 | 30            | 300                     | 16670                              | 3000                         | 450  | 4265                | 1420              | 750                          | 1680                            | 1580                        | 100                             | 700                          | 450                          |
| NSBE040                 | 40            | 400                     | 22222                              | 4000                         | 600  | 3230                | 1920              | 600                          | 2185                            | 2035                        | 150                             | 1000                         | 500                          |
| NSBE050                 | 50            | 500                     | 27778                              | 5000                         | 750  | 3960                | 1920              | 600                          | 2185                            | 2035                        | 150                             | 1000                         | 600                          |
| NSBE075                 | 75            | 750                     | 41667                              | 7500                         | 1125 | 5841                | 1920              | 600                          | 2235                            | 2035                        | 200                             | 950                          | 675                          |
| NSBE100                 | 100           | 1000                    | 55556                              | 10000                        | 1500 | 7661                | 1920              | 600                          | 2235                            | 2035                        | 200                             | 950                          | 750                          |
| NSBE125                 | 125           | 1250                    | 69444                              | 12500                        | 1875 | 9548                | 1920              | 600                          | 2235                            | 2035                        | 200                             | 950                          | 750                          |

Rotomoulded chamber construction
  GRP chamber construction
 \* Some units have more than one access shaft –diameter of largest shown.

## PROFESSIONAL INSTALLERS

Kingspan Klargester Accredited Installers  
Experience shows that correct installation is a prerequisite for the long-lasting and successful operation of any wastewater treatment product. This is why using an installer with the experience and expertise to install your product is highly recommended.



Services include :

- Site survey to establish ground conditions and soil types
- Advice on system design and product selection
- Assistance on gaining environmental consents and building approvals
- Tank and drainage system installation
- Connection to discharge point and electrical networks
- Waste emptying and disposal

Discover more about the Accredited Installers and locate your local expert online.

[www.kingspanenviro.com/klargester](http://www.kingspanenviro.com/klargester)



## CARE & MAINTENANCE

Kingspan Environmental Services  
Who better to look after your treatment plant than the people who designed and built it?



Kingspan Environmental have a dedicated service division providing maintenance for wastewater products.

Factory trained engineers are available for site visits as part of a planned maintenance contract or on a one-off call out basis.

To find out more about protecting your investment and ensuring peace of mind, call us on:

**0844 846 0500**

or visit us online:

[www.kingspanenvservice.com](http://www.kingspanenvservice.com)



## COMMERCIAL WASTEWATER SOLUTIONS

- **BIODISC® & ENVIROSAFE**  
HIGH PERFORMANCE SEW AGE TREATMENT SYSTEMS
- PACKAGE PUMP STATIONS
- **PUMPSTOR24** PUMPING SYSTEMS
- OIL/WATER SEPARATORS
- BELOW GROUND STORAGE TANKS
- GREASE & SILT TRAPS

## RAINWATER SOLUTIONS

- BELOW GROUND RAINWATER HARVESTING SYSTEMS
- ABOVE GROUND RAINWATER HARVESTING SYSTEMS

### Klargester

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Visit our website [www.kingspanenviro.com/klargester](http://www.kingspanenviro.com/klargester)



In keeping with Company policy of continuing research and development and in order to offer our clients the most advanced products, Kingspan Environmental reserves the right to alter specifications and drawings without prior notice.

## **APPENDIX L: SuDS Maintenance and Management Plan**



**SUDS MANAGEMENT AND  
MAINTENANCE PLAN**

**APRIL 2024**



**the journey is the reward**

**LIDL GREAT BRITAIN LTD  
PURBROOK WAY  
HAVANT**

**SUDS MANAGEMENT AND  
MAINTENANCE PLAN**

**APRIL 2024**

|                      |                        |
|----------------------|------------------------|
| <b>Project Code:</b> | <b>A/LIDLHAVANT.23</b> |
| <b>Prepared by:</b>  | <b>CG</b>              |
| <b>Approved by:</b>  | <b>SF</b>              |
| <b>Issue Date:</b>   | <b>April 2024</b>      |
| <b>Status:</b>       | <b>3rd Issue</b>       |

**LIDL Great Britain Ltd  
Purbrook Way  
Havant  
SuDS Management and Maintenance Plan**

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### **Appendices**

|                                               |  |
|-----------------------------------------------|--|
| APPENDIX A: Drainage General Arrangement Plan |  |
|-----------------------------------------------|--|

# 1 Introduction

- 1.1 Mayer Brown Ltd have been commissioned by Lidl Great Britain Ltd to provide a SuDS Management and Maintenance Plan in support of a planning application for a proposed new food store development located at Purbrook Way, Havant.
- 1.2 The proposed surface water drainage network (refer to Appendix A) utilises Sustainable Drainage techniques (SuDS) including a petrol interceptor and a proprietary attenuation tank. The management and maintenance of these features is of paramount importance to ensure their effectiveness over the lifetime of the development.
- 1.3 The proposed surface water attenuation features will not be adopted by any public body and will remain in private ownership. There will be a designated site maintenance team employed who should enable tight control over the operation and maintenance of the drainage/SuDS systems as proposed in this report.
- 1.4 This Owner's Manual is for advising the required maintenance activities for the sustainable drainage network. This report has been prepared with reference to CIRIA document C753 – The SuDS Manual and provides current best practice guidance on Sustainable Drainage Systems (SuDS) to facilitate their effective implementation within developments.

## 2 Management and Maintenance of SuDS Features

### Introduction

- 2.1 Unlike conventional drainage systems, SuDS features should be visible and their function should be easily understood by those responsible for maintenance. When problems occur, they are generally obvious and can be remedied simply, using standard landscaping practice. If systems are properly monitored and maintained, any deterioration in performance can often be managed out.
- 2.2 There are three categories of maintenance activities:
- **Regular Maintenance** (*including inspections and monitoring*) – Consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.
  - **Occasional Maintenance** – Comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (e.g. sediment removal).
  - **Remedial Maintenance** – Comprises intermittent tasks that may be required to rectify faults associated with the system.

### Health and Safety

- 2.3 All those responsible for maintenance should take appropriate health and safety precautions of all activities (including lone working, if relevant) and risk assessments should always be undertaken.

## Attenuation Tank

- 2.4 Attenuation tanks are excavations that are filled with a void-forming material (typically geocellular units) that allows the temporary storage of water before it discharges at a controlled rate into the downstream sewer network or watercourse.
- 2.5 Regular inspection and maintenance are required to ensure the effective long-term operation of the below ground storage tanks, see Table 2.1 below for details:

| Maintenance Schedule   | Required Action                                                                                        | Recommended Frequency                          |
|------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Regular Maintenance    | Inspect for sediment and debris in pre-treatment components.                                           | Annually                                       |
|                        | Cleaning of gutters and any filters on downpipes.                                                      | Annually (or as required based on inspections) |
|                        | Trimming any roots that may be causing blockages.                                                      | Annually, or as required.                      |
| Occasional Maintenance | Remove sediments and debris from pre-treatment components.                                             | As required, based on inspections.             |
| Remedial Actions       | Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failures occur. | As required.                                   |
|                        | Replacement of clogged geotextile (will require reconstruction of soakaway).                           | As required.                                   |
| Monitoring             | Inspect silt traps and note rate of sediment accumulation.                                             | Monthly in the first year and then annually.   |
|                        | Check soakaway to ensure emptying is occurring.                                                        | Annually.                                      |

**Table 2.1: Soakaway Tank Maintenance Requirements**

## Petrol Interceptor

- 2.6 The petrol interceptor is designed in this system to remove oils, silts and sediments from the surface water before it is discharged into the sewer.
- 2.7 A petrol interceptor is a type of proprietary treatment system which are surface and subsurface manufactured products designed to provide treatment of water through the removal of contaminants.
- 2.8 Regular inspection and maintenance are important for the effective operation of proprietary treatment systems as designed; these are described in Table 2.2:

| Maintenance Schedule | Required Action                                                                    | Recommended Frequency                                                                      |
|----------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Routine Maintenance  | Remove litter and debris and inspect for sediment, oil and grease accumulation.    | Six monthly.                                                                               |
|                      | Change the filter media.                                                           | As recommended by manufacturer.                                                            |
|                      | Remove sediment, oil, grease and floatables.                                       | As necessary – indicated by system inspections or immediately following significant spill. |
| Remedial Actions     | Replace malfunctioning parts or structures.                                        | As required.                                                                               |
| Monitoring           | Inspect for evidence of poor operation.                                            | Six monthly.                                                                               |
|                      | Inspect filter media and establish appropriate replacement frequencies.            | Six monthly.                                                                               |
|                      | Inspect sediment accumulation rates and establish appropriate removal frequencies. | Monthly during first half of operation, then every six months.                             |

**Table 2.2: Proprietary Treatment System Maintenance Requirements**

- 2.9 However, there are specific requirements for oil/water separators. The following should be undertaken every six months as a minimum:
- Check volume of sludge,
  - Check thickness of light liquid,
  - Check function of automatic closure device,
  - Empty the separator, if required,
  - Check the coalescing material and clean or change if necessary (class 1 only), and
  - Check the function of the warning device (if fitted).
- 2.10 General inspection of the integrity of the oil/water separator should take place every five years and should cover:
- Watertightness of system,
  - Structural condition,

- Internal coatings,
- In-built parts,
- Electrical devices and installations, and
- Adjustment of automatic closure device.

2.11 It is usually required to fill separators with clean water before they are put into operation and after every time it is emptied for maintenance. Failure to do this will cause the separator to malfunction until surface water builds up the required permanent water level in the facility. It is possible to fit an alarm to separators that will indicate when the collected oil volume is at a maximum, and this may be a regulatory requirement. The alarms should be placed in a location that is clearly visible to those responsible for maintenance of the system.

## 3 Maintenance Activities

### Regular Maintenance Activities

#### Inspections and Reporting

- 3.1 Inspections can generally be carried out at monthly site visits and should be subsumed into regular maintenance requirements. During the first year of operation, inspections should ideally be carried out after every significant storm event to ensure proper functioning, but in practice this may be difficult or impractical to arrange.
- 3.2 Typical routine inspection questions that will indicate when occasional or remedial maintenance activities are required, and/or when water quality requires investigation include:
- Are inlets or outlets blocked?
  - Is there evidence of sediment build up?
  - Is there evidence of structural damage that requires repair?

#### Litter/Debris Removal

- 3.3 This is an integral part of SuDS maintenance and reduces the risks of inlet and outlet blockages, retains amenity value and minimises pollution risks.

### Irregular Maintenance Activities

#### Sediment Removal

- 3.4 To ensure long-term effectiveness, the sediment that accumulates in SuDS should be removed periodically.
- 3.5 Sediment accumulation will typically be rapid for the entire construction period (including time required for the building, turfing and landscaping of all upstream development plots). Once a catchment is completely developed and all vegetation is well-established, sediment mobility and accumulation is likely to drop significantly.

### Remedial Maintenance

#### Structure rehabilitation/repair

- 3.6 There will come a time with most SuDS techniques when a major overhaul of the system is required to remove clogged filters, geotextiles, gravel etc. This will typically be between 10 and 25 years, depending on the technique and factors such as the type of catchment and sediment load.

- 3.7 Major overhaul is most likely to be required on techniques that rely on filtration through soils or aggregates, such as sand filters and infiltration devices. Other SuDS techniques are unlikely to need major overhaul if routine maintenance is undertaken as required.

## **APPENDIX A: Drainage General Arrangement Plan**

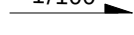


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A1 ORIGINAL

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KEY:

- |                                                                                     |                                                     |
|-------------------------------------------------------------------------------------|-----------------------------------------------------|
|  | PROPOSED SURFACE WATER SEWER AND MANHOLE            |
|  | PROPOSED SURFACE WATER SEWER AND INSPECTION CHAMBER |
|  | PROPOSED HYDROBRAKE                                 |
|  | PROPOSED SURFACE WATER LINEAR DRAINAGE CHANNEL      |
|  | PROPOSED RISING MAIN                                |
|  | PROPOSED PERFORATED PIPE                            |
|  | PROPOSED PETROL INTERCEPTOR                         |
|  | PROPOSED INFILTRATION TANK                          |
|  | PROPOSED RAIN WATER PIPE                            |
|  | PROPOSED GULLY AND GULLY LEAD                       |
|  | PROPOSED FOUL WATER SEWER AND MANHOLE               |
|  | PROPOSED FOUL WATER INSPECTION CHAMBER              |
|  | PROPOSED FOUL WATER DRAINAGE RODDING EYE            |
|  | CONSTRUCTION LINE                                   |
|  | PROPOSED SPOT LEVEL                                 |
|  | PROPOSED GRADIENT                                   |
|  | PROPOSED UNDERBUILD                                 |
|  | EXTENT OF TREE PIT FOUNDATION                       |

NOTES:

1. This drawing is not to be scaled.
2. Levels are in metres Above Ordnance Datum (m AOD)
3. Drawing based on SPACE "Site Layout Plan" drawing reference XX-00-DR-A-91001 revision 5, received on 21/03/2024.
4. This drawing is to be read in conjunction with the following Mayer Brown drawing reference:
  - LIDLHAVANT.2/42 - Proposed Site Sections

FOR APPROVAL  
NOT FOR CONSTRUCTION

|    |                                                                                                         |    |          |
|----|---------------------------------------------------------------------------------------------------------|----|----------|
| P6 | Drawing updated following revised SPACE Architect's layout received on 23/02/2024. Key updated. (TC)    | SF | 28/03/24 |
| P5 | Attenuation Tank increased in depth and reduced in footprint to avoid tree pits in car park             | SF | 26/01/23 |
| P4 | Note about outfall into private surface water drain in the main access road amended. (TC)               | SF | 19/02/21 |
| P3 | Microdrainage pipe numbers added to surface water network. Attenuation tank lowered and volume reduced. | SF | 15/02/21 |
| P2 | Drainage updated to suit One Design proposed level strategy (TC)                                        | SF | 23/10/20 |
| P1 | Initial Issue. (SF)                                                                                     | SF | 28/08/20 |

| rev. | amendment | checked | date |
|------|-----------|---------|------|
|------|-----------|---------|------|



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client

LIDL UK GmbH

project

HAVANT

scale

scale

---

1.250

date \_\_\_\_\_

date

AUGUST 2020

AUGUST

title

PROPOSED SURFACE AND FOUL WATER  
GENERAL ARRANGEMENT DRAWING

|                             |             |          |
|-----------------------------|-------------|----------|
| Mayer Brown Limited jobcode | suitability | revision |
|                             | -           | P6       |

drawing number

SF/LIDLHAVANT.23/20



## **APPENDIX M: Remada Ground Investigation Extract & Site Logs**

# PHASE 2 GROUND INVESTIGATION

Lidl Great Britain Ltd  
Purbrook Way, Havant



## **Executive Summary**

Remada Ltd was commissioned by Lidl Great Britain Ltd to undertake a Phase 2 Ground Investigation at Purbrook Way, Havant, PO9 3QJ at the location indicated in **Figure 1**.

### Site Setting & History

The site is irregular in shape and with boundaries that are parallel with Purbrook Way the south and the adjacent B&Q store to the east. The western and northern boundary is curved and formed by the access road to B&Q. The topography of the site is obscured by impenetrable dense vegetation in central and southern parts however the northern is grassy and slopes down to the access road that serves B&Q.

### Published Geology & Hydrogeology

The investigation comprised 3 No cable tool boreholes to target 10m depth and 5 No window sample holes to 5m depth. Due to dense vegetation and restraints imposed by the ecologist, it was not possible to access all window sample locations with the proposed car park. Made Ground was observed at all exploratory locations as firm to stiff orange/brown grey slightly gravelly clay to a maximum depth of 5.0m in CP1 and CP2 beneath the store footprint. At CP3A and CP3B the fill material contained concrete boulders and concrete kerbstones that were removed by excavator and the exploratory hole was advanced as a trial pit. WS2 was also obstructed by a concrete boulder within the fill material that was subsequently removed by excavator and the exploratory hole was advanced as a trial pit.

Bedrock was encountered in all of the exploratory holes as stiff to very stiff micaceous blue grey CLAY considered to be representative of London Clay. Due to the change in topographical elevation between the perimeter of the site and central area beneath the proposed store footprint, the depth to bedrock varied from 0.25m at WS1 to 5.0m in CP1 and CP2.

### Human Health Assessment

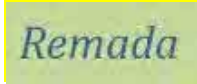
The results of soil chemical analysis were compared to Human Health Generic Assessment Criteria for commercial land use. None of the analytes tested were detected at concentrations that exceeded the human health GAC protective of on-site workers.

### Water Resources Assessment

The results of the soil chemical analysis undertaken has identified that concentrations of metals and inorganic contaminants are within the range of typical made ground. Detectable concentrations of TPH and PAHs were encountered WS2 however BGS Sheet 316 indicates that the London Clay extends to a minimum of 77m and it is therefore considered to be protective of the underlying groundwater source protection zone. There are no watercourses within close proximity of site.

### Waste Classification

Additional sampling and analyses were undertaken on the made ground fill at between 0.5m and 3.5m bgl to enable an assessment of potential waste disposal classification as it anticipated that ground will be reduced to enable the development. The concentrations of metals and organic contaminants were generally in the range of inert soils and in general, the results of the chemical analysis indicates that the material would generally be classified as inert however due to concentration of Total Organic Carbon it may necessary to discuss the results with potential receive site to ensure that the surplus is removed as an inert material.



## 2 SUMMARY OF PHASE 1 DESK STUDY

The Executive Summary and Conceptual Site Model presented within the Phase 1 Desk Study are reproduced below:

### **Site Setting**

*The site is irregular in shape and with boundaries that are parallel with Purbrook Way the south and the adjacent B&Q store to the east as indicated in **Figure 2**. The western and northern boundary is curved and formed by the access road to B&Q. The topography of the site is obscured by impenetrable dense vegetation in central and southern parts however the northern is grassy and slopes down to the access road that serves B&Q. The boundary to B&Q is formed by a retaining wall that retains the site at approximately 3m above the adjacent car park. The southern boundary of the site also reduces in level to form a low-lying abandoned track adjacent to Purbrook Way.*



### **Recommendations**

#### Environmental

*The desk study has identified a number of on-site and off-site potential sources of contamination that would require further investigation. The following is recommended:*

- Investigation of the lateral and vertical extent of made ground/fill beneath the proposed store footprint;*
- Collection of soil and groundwater samples from the areas identified above for contaminants of concern; and*
- Ground gas monitoring.*

#### Geotechnical

*It is recommended that a ground investigation is undertaken to enable preliminary foundation design.*



## **4 GEOTECHNICAL & ENVIRONMENTAL INVESTIGATION FINDINGS**

### **4.1 Ground Conditions**

A brief description of the published geology is provided together with a summary of the ground conditions encountered during the intrusive investigation. Exploratory logs are presented at the end of the report.

#### **4.1.1 Published Geology**

Bedrock beneath the site is formed of London Clay and designated as unproductive strata. However, a Principal Aquifer associated with a sequence of chalk members is recorded approximately 2000m to the south.

#### **4.1.2 Made Ground**

#### **4.1.3 Superficial Deposits**

No superficial deposits were positively identified underlying the study site during Remada's investigation.

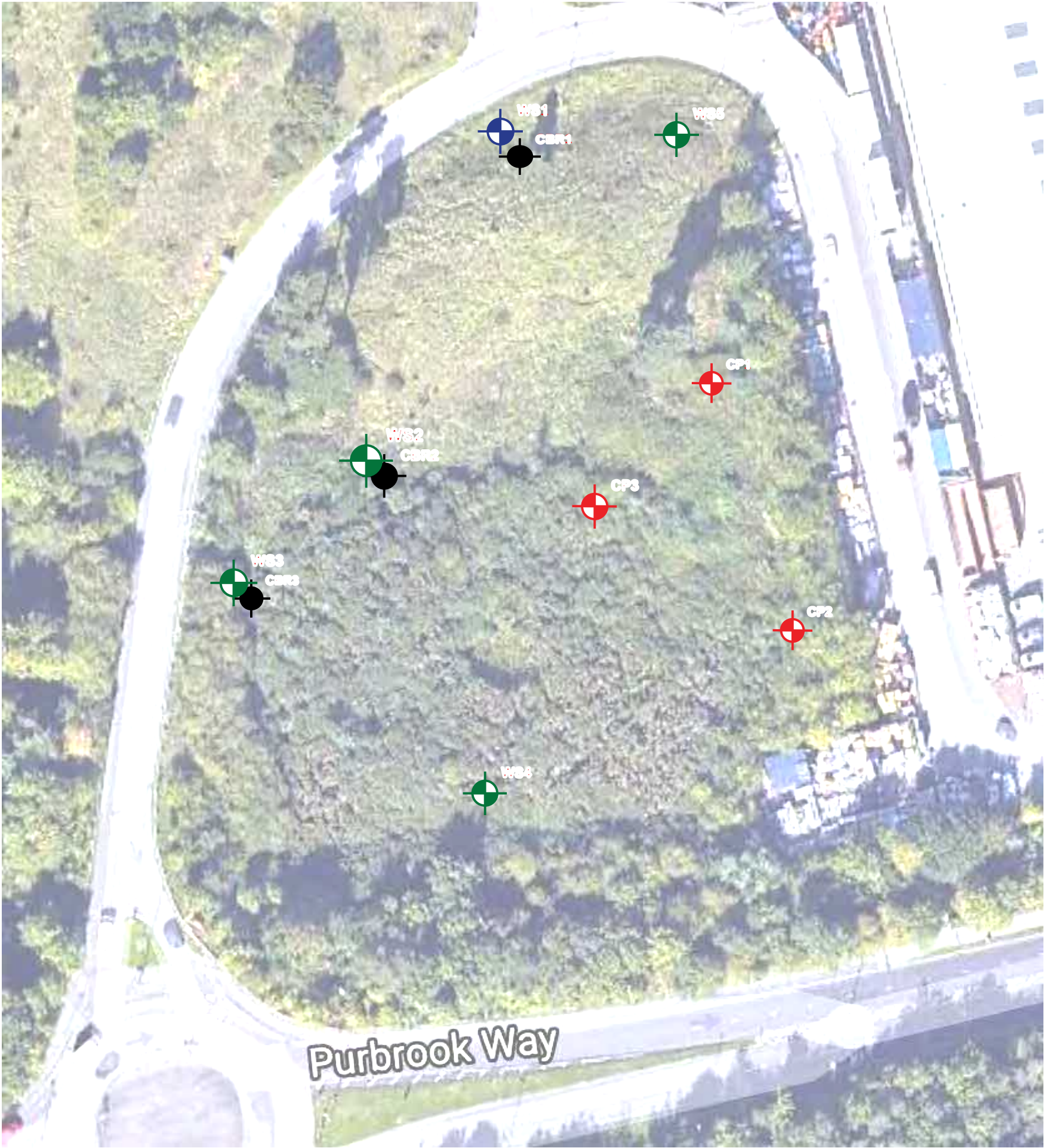
#### **4.1.4 Bedrock**

Due to the change in topographical elevation between the permitted of the site and central area beneath the proposed store footprint, the depth to bedrock varied from 0.25m at WS1 to 5.0m in CP1 and CP2. The topographical elevation of the stiff to very stiff micaceous blue grey CLAY reduced from 37.9m AOD beneath the north of the site at WS1 to 35.3m AOD at CP2 adjacent to the retaining wall beneath the southern end of the proposed store footprint.

### **4.2 In-situ Testing**

#### **4.2.1 Standard Penetration Tests (SPTs)**

In-situ SPTs were undertaken to assist with the interpretation of strata encountered and the results of uncorrected N-values versus depth are plotted in the graph below. It should be noted that the SPTs that refused within the made ground and the weathered bedrock have not been included in the graph.

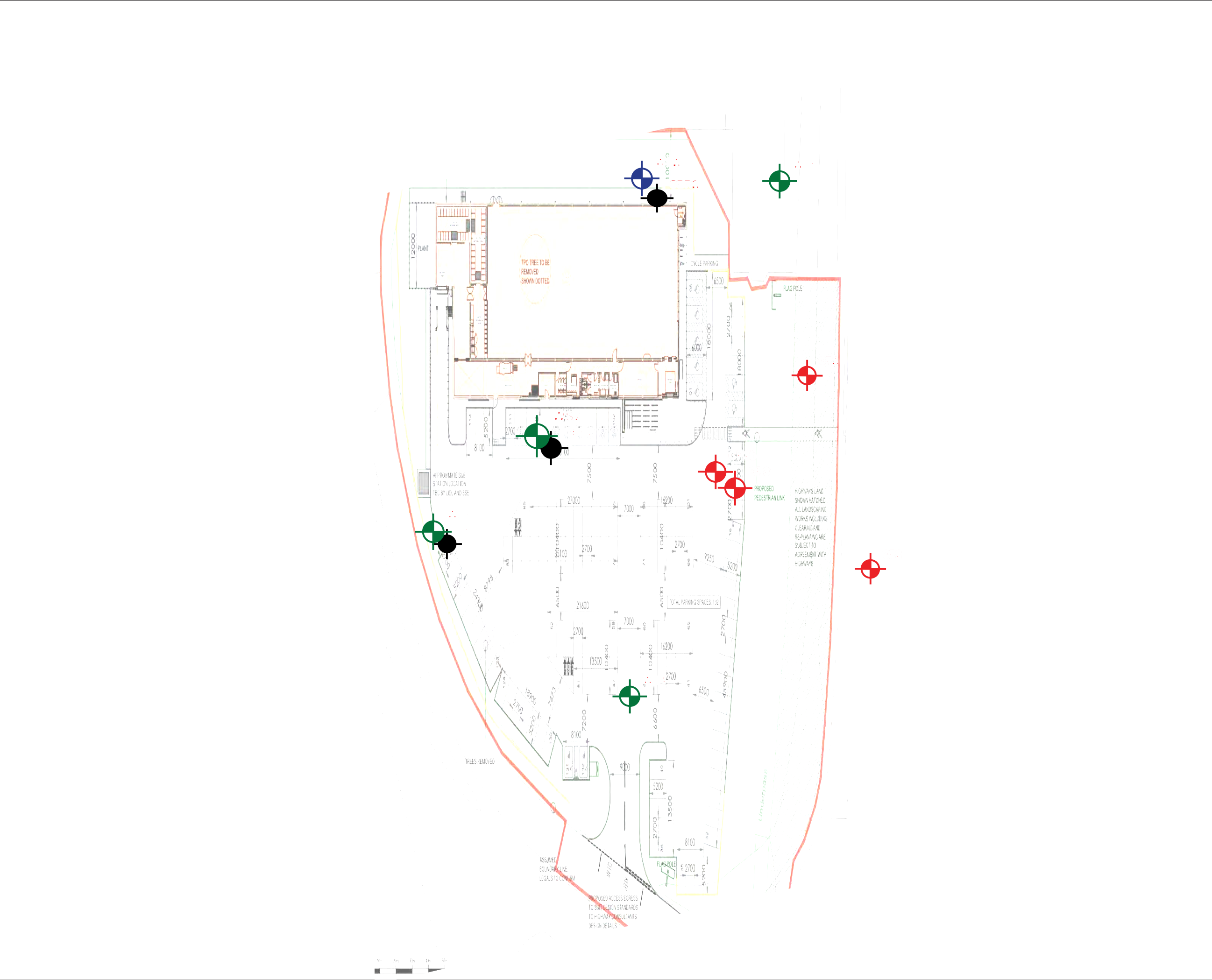


- Legend
- Window Sample & Installation
  - Window Sample
  - Cabletool Borehole & Installation
  - CBR Test

Notes

WS 4: proposed location not accessible as vegetation clearance not permitted by ecologist

|                                                      |         |                                                                                       |
|------------------------------------------------------|---------|---------------------------------------------------------------------------------------|
| Project Title                                        |         |                                                                                       |
| Havant, Purbrook Way                                 |         |                                                                                       |
| Drawing Title                                        |         |                                                                                       |
| Figure 2: Exploratory Locations with Existing Layout |         |                                                                                       |
| Client                                               |         |                                                                                       |
| Lidl Great Britain Ltd                               |         |  |
| Scale                                                | Drawn   | Size                                                                                  |
| As shown                                             | GJ      | A3                                                                                    |
| Date                                                 | Job No. | Drawing Rev No.                                                                       |
| 20.07.20                                             | 770     | 02                                                                                    |



Legend

Window Sample & Installation

Window Sample

Cabletool Borehole & Installation

CBR Test

Notes

WS 4: proposed location not accessible as vegetation clearance not permitted by ecologist

Proposed layout reproduced from One Design Drawing 19139 AD110

Project Title

Havant, Purbrook Way

Drawing Title

Figure 3: Exploratory Locations with Proposed Layout

Client

Lidl Great Britain Ltd



|       |          |         |     |                 |    |
|-------|----------|---------|-----|-----------------|----|
| Scale | As shown | Drawn   | GJ  | Size            | A3 |
| Date  | 27.10.20 | Job No. | 770 | Drawing Rev No. | 02 |

Remada



# EXPLORATORY LOGS

## BOREHOLE LOG

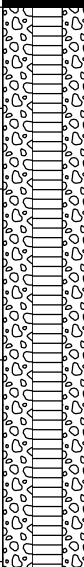
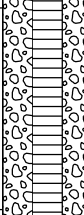
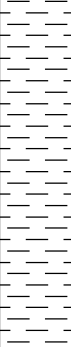
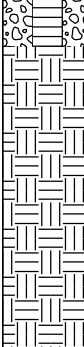
|                   |                  |                           |                                            |                 |  |
|-------------------|------------------|---------------------------|--------------------------------------------|-----------------|--|
| Project<br>Havant |                  |                           |                                            | BOREHOLE No     |  |
| Job No<br>770.02  | Date<br>11-08-20 | Ground Level (m)<br>38.18 | Co-Ordinates ()<br>E 469,415.0 N 107,845.0 |                 |  |
| Contractor        |                  |                           |                                            | Sheet<br>1 of 1 |  |

| SAMPLES & TESTS |         |             | Water |               |                                                                                     |                    | STRATA                                                                                                   | Geology | Instrument/<br>Backfill                                                             |  |
|-----------------|---------|-------------|-------|---------------|-------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|--|
| Depth           | Type No | Test Result |       | Reduced Level | Legend                                                                              | Depth (Thick-ness) | DESCRIPTION                                                                                              |         |                                                                                     |  |
| 0.00-0.25       | ES      | N14         |       | 37.93         |    | 0.25               | MADE GROUND: Firm to stiff ferruginous red/brown/grey silty clay with flecks of chalk (earthworks fill). |         |  |  |
| 0.25-1.00       | D       |             |       |               |                                                                                     |                    | Firm to stiff micaceous blue/grey CLAY (London Clay).<br><br>Becoming stiff...                           |         |                                                                                     |  |
| 1.00            |         |             |       |               |                                                                                     |                    | Becoming very stiff....                                                                                  |         |                                                                                     |  |
| 2.00            |         |             |       | N19           |                                                                                     |                    |                                                                                                          |         |                                                                                     |  |
| 3.00            |         |             |       | N24           |                                                                                     |                    | (5.25)                                                                                                   |         |                                                                                     |  |
| 4.00            |         | N26         |       |               |                                                                                     |                    |                                                                                                          |         |                                                                                     |  |
| 5.00            |         | N39         |       |               |                                                                                     |                    |                                                                                                          |         |                                                                                     |  |
|                 |         |             |       | 32.68         |  | 5.50               |                                                                                                          |         |                                                                                     |  |
|                 |         |             |       |               |                                                                                     |                    |                                                                                                          |         |                                                                                     |  |

| Boring Progress and Water Observations   |      |      |                                  |         |             | Chiselling                           |    |       | Water Added |    | GENERAL REMARKS                                                                                                                        |
|------------------------------------------|------|------|----------------------------------|---------|-------------|--------------------------------------|----|-------|-------------|----|----------------------------------------------------------------------------------------------------------------------------------------|
| Depth                                    | Date | Time | Casing Depth                     | Dia. mm | Water Depth | From                                 | To | Hours | From        | To |                                                                                                                                        |
|                                          |      |      |                                  |         |             |                                      |    |       |             |    | NVO - No Visual or Olfactory Evidence of Contamination                                                                                 |
|                                          |      |      |                                  |         |             |                                      |    |       |             |    | No groundwater encountered.                                                                                                            |
|                                          |      |      |                                  |         |             |                                      |    |       |             |    | Borehole positioned on slope so working platform cut with excavator. Top of borehole approximately 0.5m below adjacent ground surface. |
| All dimensions in metres<br>Scale 1:37.5 |      |      | Client<br>Lidl Great Britain Ltd |         |             | Method/<br>Plant Used<br>Tracked Rig |    |       |             |    |                                                                                                                                        |

## BOREHOLE LOG

|                   |                  |                           |                                            |                 |  |
|-------------------|------------------|---------------------------|--------------------------------------------|-----------------|--|
| Project<br>Havant |                  |                           |                                            | BOREHOLE No     |  |
| Job No<br>770.02  | Date<br>11-08-20 | Ground Level (m)<br>42.12 | Co-Ordinates ()<br>E 469,396.0 N 107,796.0 |                 |  |
| Contractor        |                  |                           |                                            | Sheet<br>1 of 1 |  |

| SAMPLES & TESTS |         |             | Water |                                                                                     |                                                                                                              |                                                                                                           | STRATA                                                        |                                                                                      | Geology                                                                               | Instrument/<br>Backfill |
|-----------------|---------|-------------|-------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|
| Depth           | Type No | Test Result |       | Reduced Level                                                                       | Legend                                                                                                       | Depth (Thick-ness)                                                                                        | DESCRIPTION                                                   |                                                                                      |                                                                                       |                         |
| 1.00            | ES      | N10         |       |    | (1.00)                                                                                                       | MADE GROUND: Light brown/grey gravelly sandy clay. Gravel is chalk, brick and concrete (earthworks fill). |                                                               |                                                                                      |    |                         |
|                 |         |             | 41.12 |                                                                                     | 1.00                                                                                                         | MADE GROUND: Concrete boulder with steel beam - Removed by excavator.                                     |                                                               |                                                                                      |                                                                                       |                         |
| 1.50-1.90       |         |             | 40.62 | 1.50                                                                                | MADE GROUND: Soft to firm red/brown/grey clay with black staining and a hydrocarbon odour (earthworks fill). |                                                                                                           |                                                               |  |                                                                                       |                         |
| 2.00-2.75       |         | D           |       | 40.22                                                                               | 1.90                                                                                                         | MADE GROUND: Firm to stiff blue/grey/brown clay (earthworks fill).                                        |                                                               |                                                                                      |                                                                                       |                         |
| 2.00            |         | N8          |       |   | (0.85)                                                                                                       | MADE GROUND: Firm to stiff brown/grey clay (earthworks fill).                                             |                                                               |                                                                                      |                                                                                       |                         |
| 3.00            |         | N18         |       |                                                                                     | 39.37                                                                                                        | 2.75                                                                                                      | MADE GROUND: Firm to stiff brown/grey clay (earthworks fill). |                                                                                      |                                                                                       |                         |
|                 |         |             |       |                                                                                     | (1.00)                                                                                                       |                                                                                                           |                                                               |                                                                                      |  |                         |
|                 |         |             |       | 38.37                                                                               | 3.75                                                                                                         |                                                                                                           |                                                               |                                                                                      |                                                                                       |                         |
| 4.00            |         | N29         |       |  | (1.75)                                                                                                       | Stiff to very stiff blue/grey micaceous CLAY (LONDON CLAY).                                               |                                                               |                                                                                      |  |                         |
| 5.00            |         | N32         |       |                                                                                     | 36.62                                                                                                        | 5.50                                                                                                      |                                                               |                                                                                      |                                                                                       |                         |
|                 |         |             |       |                                                                                     |                                                                                                              |                                                                                                           |                                                               |                                                                                      |                                                                                       |                         |

| Boring Progress and Water Observations   |      |      |                                  |         |             | Chiselling                        |    |       | Water Added     |    | GENERAL REMARKS                                                                           |
|------------------------------------------|------|------|----------------------------------|---------|-------------|-----------------------------------|----|-------|-----------------|----|-------------------------------------------------------------------------------------------|
| Depth                                    | Date | Time | Casing Depth                     | Dia. mm | Water Depth | From                              | To | Hours | From            | To |                                                                                           |
|                                          |      |      |                                  |         |             |                                   |    |       |                 |    | NVO - No Visual or Olfactory Evidence of Contamination<br><br>No groundwater encountered. |
| All dimensions in metres<br>Scale 1:37.5 |      |      | Client<br>Lidl Great Britain Ltd |         |             | Method/<br>Plant Used Tracked Rig |    |       | Logged By<br>GJ |    |                                                                                           |

# BOREHOLE LOG

|                       |                      |                               |                                                |                     |
|-----------------------|----------------------|-------------------------------|------------------------------------------------|---------------------|
| Project<br><br>Havant |                      |                               |                                                | BOREHOLE No         |
| Job No<br><br>770.02  | Date<br><br>11-08-20 | Ground Level (m)<br><br>42.57 | Co-Ordinates ()<br><br>E 469,380.0 N 107,780.0 |                     |
| Contractor            |                      |                               |                                                |                     |
|                       |                      |                               |                                                | Sheet<br><br>1 of 1 |

| SAMPLES & TESTS   |         |                | Water | STRATA         |        |                                | Geology                                                                                                                         | Instrument/<br>Backfill |
|-------------------|---------|----------------|-------|----------------|--------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Depth             | Type No | Test Result    |       | Reduced Level  | Legend | Depth (Thick-ness)             |                                                                                                                                 |                         |
| 1.00-2.00<br>1.00 | ES      | N21            |       |                |        | (2.25)                         | MADE GROUND: Stiff light brown gravelly slightly sandy clay. Gravel is brick (earthworks fill).<br><br>Becoming very stiff..... |                         |
| 2.00              |         | N58/<br>200 mm | 40.32 | 2.25           |        |                                |                                                                                                                                 |                         |
| 3.00              |         | N18            | 39.37 | 3.20           |        |                                | MADE GROUND: Firm brown gravelly clay. Gravel is chalk (earthworks fill).                                                       |                         |
| 4.00              |         | N19            |       |                |        |                                | MADE GROUND: Stiff brown/blue/grey sandy clay (earthworks fill).                                                                |                         |
|                   |         |                |       | 37.07          | 5.50   |                                |                                                                                                                                 |                         |
|                   |         |                | 36.57 | (0.50)<br>6.00 |        | Stiff blue/grey micaceous clay |                                                                                                                                 |                         |

| Boring Progress and Water Observations |      |      |       |                   |                | Chiselling |    |       | Water Added |    | GENERAL<br>REMARKS                                                                                 |
|----------------------------------------|------|------|-------|-------------------|----------------|------------|----|-------|-------------|----|----------------------------------------------------------------------------------------------------|
| Depth                                  | Date | Time | Depth | Casing<br>Dia. mm | Water<br>Depth | From       | To | Hours | From        | To |                                                                                                    |
|                                        |      |      |       |                   |                |            |    |       |             |    | NVO - No Visual or<br>Olfactory Evidence of<br>Contamination<br><br>No groundwater<br>encountered. |

All dimensions in metres  
Scale 1:37.5

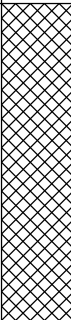
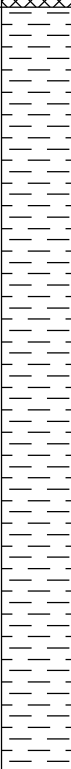
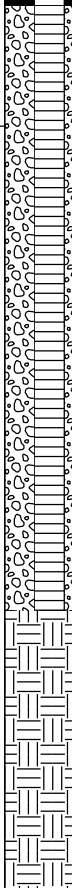
|        |                        |
|--------|------------------------|
| Client | Lidl Great Britain Ltd |
|--------|------------------------|

| Method/<br>Plant Used | Tracked Rig |
|-----------------------|-------------|
|-----------------------|-------------|

|           |    |
|-----------|----|
| Logged By | GJ |
|-----------|----|

# BOREHOLE LOG

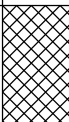
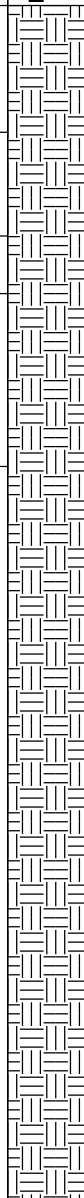
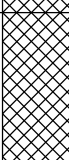
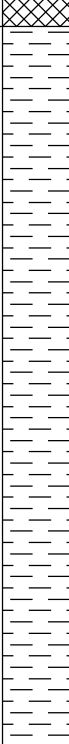
|                          |                         |                                  |                                                   |                        |
|--------------------------|-------------------------|----------------------------------|---------------------------------------------------|------------------------|
| Project<br><b>Havant</b> |                         |                                  |                                                   | BOREHOLE No            |
| Job No<br><b>770.02</b>  | Date<br><b>11-08-20</b> | Ground Level (m)<br><b>39.12</b> | Co-Ordinates ()<br><b>E 469,442.0 N 107,844.0</b> |                        |
| Contractor               |                         |                                  |                                                   | Sheet<br><b>1 of 1</b> |

| SAMPLES & TESTS |         |                | Water |               |                                                                                    |                    | STRATA                                                                                 | Geology | Instrument/<br>Backfill                                                               |
|-----------------|---------|----------------|-------|---------------|------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|
| Depth           | Type No | Test Result    |       | Reduced Level | Legend                                                                             | Depth (Thick-ness) | DESCRIPTION                                                                            |         |                                                                                       |
| 0.60-0.80       | ES      | N10            |       | 37.52         |   | (1.60)             | MADE GROUND: Firm to stiff ferruginous red/brown/grey clay.                            |         |    |
| 1.00            |         |                |       |               |                                                                                    |                    |                                                                                        |         |                                                                                       |
| 2.00            | U       | N37            |       | 33.62         |  | (3.90)             | Firm blue grey micaceous CLAY.<br><br>Becoming stiff...<br><br>Becoming very stiff.... |         |   |
| 2.55-3.00       |         |                |       |               |                                                                                    |                    |                                                                                        |         |                                                                                       |
| 3.00            |         | N50/<br>295 mm |       |               |                                                                                    |                    |                                                                                        |         |                                                                                       |
|                 |         |                |       |               |                                                                                    |                    |                                                                                        |         |                                                                                       |
|                 |         |                |       |               |                                                                                    |                    |                                                                                        |         |  |

| Boring Progress and Water Observations   |      |                                  |              |         |             | Chiselling                        |    |       | Water Added |    | GENERAL REMARKS                                                                           |
|------------------------------------------|------|----------------------------------|--------------|---------|-------------|-----------------------------------|----|-------|-------------|----|-------------------------------------------------------------------------------------------|
| Depth                                    | Date | Time                             | Casing Depth | Dia. mm | Water Depth | From                              | To | Hours | From        | To |                                                                                           |
|                                          |      |                                  |              |         |             |                                   |    |       |             |    | NVO - No Visual or Olfactory Evidence of Contamination<br><br>No groundwater encountered. |
| All dimensions in metres<br>Scale 1:37.5 |      | Client<br>Lidl Great Britain Ltd |              |         |             | Method/<br>Plant Used Tracked Rig |    |       |             |    | Logged By<br>GJ                                                                           |

# BOREHOLE LOG

|                       |                              |                               |                                                |             |
|-----------------------|------------------------------|-------------------------------|------------------------------------------------|-------------|
| Project<br><br>Havant |                              |                               |                                                | BOREHOLE No |
| Job No<br><br>770.02  | Date<br>17-08-20<br>18-08-20 | Ground Level (m)<br><br>41.87 | Co-Ordinates ()<br><br>E 469,447.0 N 107,809.0 |             |
| Contractor            |                              |                               |                                                |             |
| Sheet<br><br>1 of 1   |                              |                               |                                                |             |

| SAMPLES & TESTS |                 |                | Water |                  |                                                                                   | Depth<br>(Thick-<br>ness)                                                         | STRATA                                                                                       | Geology | Instrument/<br>Backfill                                                              |                                                              |                                                                                    |                                                        |  |  |  |  |     |
|-----------------|-----------------|----------------|-------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------|--|--|--|--|-----|
| Depth           | Type<br>No      | Test<br>Result |       | Reduced<br>Level | Legend                                                                            |                                                                                   | DESCRIPTION                                                                                  |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 0.50            | ES              | N22            |       | 40.77            |  | (1.10)<br>1.10                                                                    | MADE GROUND: Firm to stiff orange/brown very sandy slightly gravelly clay (earthworks fill). |         |  |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 1.50            | D<br>ES<br>U100 |                |       | 39.87            |                                                                                   | (0.90)<br>2.00                                                                    | MADE GROUND: Firm to stiff orange / brown sandy clay (earthworks fill).                      |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 2.00<br>2.00    |                 |                |       | 39.37            |                                                                                   | (0.50)<br>2.50                                                                    | MADE GROUND: Orange brown silty clayey sand (earthworks fill).                               |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 2.50            |                 |                |       |                  |                                                                                   |  | (1.50)<br>4.00                                                                               |         |                                                                                      | MADE GROUND: Stiff orange brown/grey clay (earthworks fill). |                                                                                    |                                                        |  |  |  |  |     |
| 3.00<br>3.00    | N12             | 37.87          |       |                  |                                                                                   |                                                                                   |                                                                                              |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 4.00            |                 | U100           |       |                  |                                                                                   |                                                                                   |                                                                                              |         |                                                                                      |                                                              |  | Stiff to very stiff blue grey slightly micacious CLAY. |  |  |  |  |     |
| 4.45<br>4.50    | D               | N20            |       |                  |                                                                                   |                                                                                   |                                                                                              |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 5.50            | D               |                |       |                  |                                                                                   |                                                                                   |                                                                                              | N18     |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 6.00<br>6.00    | D               | N20            |       |                  |                                                                                   |                                                                                   |                                                                                              |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 7.00            | U100            |                |       |                  |                                                                                   |                                                                                   |                                                                                              |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 7.50            |                 |                |       |                  |                                                                                   |                                                                                   |                                                                                              |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 9.00            |                 | N20            |       |                  |                                                                                   |                                                                                   |                                                                                              |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |
| 10.00           |                 |                |       |                  |                                                                                   |                                                                                   |                                                                                              |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  | N24 |
|                 |                 |                |       | 31.37            |                                                                                   | 10.50                                                                             |                                                                                              |         |                                                                                      |                                                              |                                                                                    |                                                        |  |  |  |  |     |

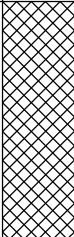
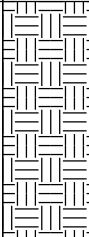
| Boring Progress and Water Observations     |      |      |                                  |         |             | Chiselling                       |    |       | Water Added |    | GENERAL REMARKS                                                                           |
|--------------------------------------------|------|------|----------------------------------|---------|-------------|----------------------------------|----|-------|-------------|----|-------------------------------------------------------------------------------------------|
| Depth                                      | Date | Time | Casing Depth                     | Dia. mm | Water Depth | From                             | To | Hours | From        | To |                                                                                           |
|                                            |      |      |                                  |         |             |                                  |    |       |             |    | NVO - No Visual or Olfactory Evidence of Contamination<br><br>No groundwater encountered. |
| All dimensions in metres<br>Scale 1:65.625 |      |      | Client<br>Lidl Great Britain Ltd |         |             | Method/<br>Plant Used Dando 2000 |    |       |             |    | Logged By<br>GJ                                                                           |





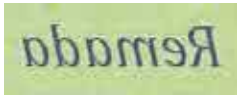
# BOREHOLE LOG

|                       |                              |                               |                                                |                     |
|-----------------------|------------------------------|-------------------------------|------------------------------------------------|---------------------|
| Project<br><br>Havant |                              |                               |                                                | BOREHOLE No         |
| Job No<br><br>770.02  | Date<br>17-08-20<br>17-08-20 | Ground Level (m)<br><br>42.11 | Co-Ordinates ()<br><br>E 469,424.0 N 107,791.0 |                     |
| Contractor            |                              |                               |                                                | Sheet<br><br>1 of 1 |

| SAMPLES & TESTS |         |             | Water | STRATA        |                                                                                   |                    |                                                                                                     | Geology | Instrument/<br>Backfill                                                             |
|-----------------|---------|-------------|-------|---------------|-----------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|
| Depth           | Type No | Test Result |       | Reduced Level | Legend                                                                            | Depth (Thick-ness) | DESCRIPTION                                                                                         |         |                                                                                     |
| 0.50-0.70       | ES      | N16         |       |               |  | (2.05)             | Made Ground: Stiff to very stiff orange brown slightly gravelly clay. Gravel is concrete and brick. |         |  |
| 1.50            |         |             |       | 40.06         |                                                                                   | 2.05               |                                                                                                     |         |                                                                                     |
|                 |         |             |       | 39.61         | 2.50                                                                              | Obstruction        |                                                                                                     |         |                                                                                     |
|                 |         |             |       |               |                                                                                   |                    |                                                                                                     |         |                                                                                     |

| Boring Progress and Water Observations     |      |                                  |              |         |             | Chiselling                       |    |       | Water Added |    | GENERAL REMARKS                                                                          |
|--------------------------------------------|------|----------------------------------|--------------|---------|-------------|----------------------------------|----|-------|-------------|----|------------------------------------------------------------------------------------------|
| Depth                                      | Date | Time                             | Casing Depth | Dia. mm | Water Depth | From                             | To | Hours | From        | To |                                                                                          |
|                                            |      |                                  |              |         |             |                                  |    |       |             |    | NVO - No Visual or Olfactory Evidence of Contamination<br><br>No groundwater encountered |
| All dimensions in metres<br>Scale 1:65.625 |      | Client<br>Lidl Great Britain Ltd |              |         |             | Method/<br>Plant Used Dando 2000 |    |       |             |    | Logged By<br>GJ                                                                          |

$$S^{\#}S^{\#}(\cdot^{\#} - \cdot^{\#} + *)^{\#} , \# \mathbb{R} S^{\#} \cdot^{\#} !$$



## BOREHOLE LOG

|                       |                              |                               |                                                |                                |
|-----------------------|------------------------------|-------------------------------|------------------------------------------------|--------------------------------|
| Project<br><br>Havant |                              |                               |                                                | BOREHOLE No<br><br><b>CP3B</b> |
| Job No<br><br>770.02  | Date<br>17-08-20<br>17-08-20 | Ground Level (m)<br><br>42.11 | Co-Ordinates ()<br><br>E 469,424.0 N 107,792.0 |                                |
| Contractor            |                              |                               |                                                |                                |
|                       |                              |                               |                                                | Sheet<br><br>1 of 1            |

| SAMPLES & TESTS |         |             | Water          |                                                                    |                                                                                                                                        |                                                                                        | STRATA      |  | Geology | Instrument/<br>Backfill |
|-----------------|---------|-------------|----------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------|--|---------|-------------------------|
| Depth           | Type No | Test Result |                | Reduced Level                                                      | Legend                                                                                                                                 | Depth (Thick-ness)                                                                     | DESCRIPTION |  |         |                         |
| 0.50            | ES      | N38         |                |                                                                    | (2.10)                                                                                                                                 | MADE GROUND: Stiff to very stiff slightly gravelly clay. Gravel is concrete and brick. |             |  |         |                         |
| 1.50            | D<br>ES |             |                |                                                                    |                                                                                                                                        |                                                                                        |             |  |         |                         |
| 1.50            |         |             | 40.01          | 2.10                                                               |                                                                                                                                        |                                                                                        |             |  |         |                         |
| 1.50            |         |             | 39.71          | 2.40                                                               | OBSTRUCTION: Concrete boulders and kerbstones removed by 8 tonne excavator and explorator hole continued as as trial pit - see photos. |                                                                                        |             |  |         |                         |
|                 |         |             | 39.21          | (0.50)<br>2.90                                                     | MADE GROUND: Stiff to very stiff orange brown/grey gravelly clay. Gravel is concrete and brick.                                        |                                                                                        |             |  |         |                         |
|                 |         |             |                | MADE GROUND: Stiff to very stiff orange/brown slightly sandy CLAY. |                                                                                                                                        |                                                                                        |             |  |         |                         |
|                 |         |             |                | (2.10)                                                             |                                                                                                                                        |                                                                                        |             |  |         |                         |
|                 |         |             | 37.11          | 5.00                                                               |                                                                                                                                        |                                                                                        |             |  |         |                         |
|                 |         | 36.61       | (0.50)<br>5.50 | Very stiff blue grey slightly micacious CLAY.                      |                                                                                                                                        |                                                                                        |             |  |         |                         |
|                 |         |             |                |                                                                    |                                                                                                                                        |                                                                                        |             |  |         |                         |



| Boring Progress and Water Observations     |      |      |                                         |         |             | Chiselling                              |    |       | Water Added            |    | GENERAL REMARKS                                                                          |
|--------------------------------------------|------|------|-----------------------------------------|---------|-------------|-----------------------------------------|----|-------|------------------------|----|------------------------------------------------------------------------------------------|
| Depth                                      | Date | Time | Casing Depth                            | Dia. mm | Water Depth | From                                    | To | Hours | From                   | To |                                                                                          |
|                                            |      |      |                                         |         |             |                                         |    |       |                        |    | NVO - No Visual or Olfactory Evidence of Contamination<br><br>No groundwater encountered |
| All dimensions in metres<br>Scale 1:65.625 |      |      | Client<br><b>Lidl Great Britain Ltd</b> |         |             | Method/<br>Plant Used <b>Dando 2000</b> |    |       | Logged By<br><b>GJ</b> |    |                                                                                          |

## **APPENDIX N: Confirmation of off-site Drainage Connections**

Flood and Water Management Team  
Economy, Transport & Environment Department,  
Hampshire County Council  
1st Floor, Ell Court West,  
The Castle  
Winchester  
Hampshire SO23 8UD

FAO Santiago Manzanero

New Kings Court  
Tollgate  
Chandler's Ford  
Eastleigh SO53 3LG

DX 155850 Eastleigh 7

DDI: 023 8085 7307  
T: 023 8090 8090  
E: felicity.marshall@blakemorgan.co.uk

[www.blakemorgan.co.uk](http://www.blakemorgan.co.uk)

12 February 2021

Our ref: FLM/00606300/000077

Your ref: SWM/2021/0042

Dear Sirs

**Our client: Lidl Great Britain Limited**

**Erection of retail foodstore with associated car parking, access, landscaping and engineering works at Land to the west of B&Q, Purbrook Way, Havant ("the Property")**

We are acting for Lidl Great Britain Limited in the purchase of the Property and confirm that the rights referred to in your letter dated 4<sup>th</sup> February 2021 in respect of the discharge and connection required for the drainage are granted in the agreed Transfer attached to the Agreement for Sale for the Property. The Property is being purchased out of Title SH20195.

The Seller, and owner of the retained land, over which the drainage rights are required, is Smith & Williamson Trust Corporation Limited and Mark Graham Weaver as trustees of The GHM Jackson 1972 Children's Settlement Trust. They are granting within the Transfer the right of free and uninterrupted passage of Services to and from the Property through the Service Apparatus that now or may at any time following the date of the agreed Transfer be laid in, under, over or through the Retained Land.

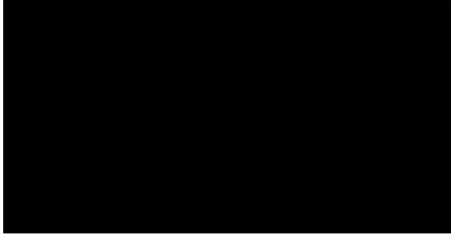
Within the Transfer the Seller is also granting the right to Lidl Great Britain Limited to install or connect into that Service Apparatus.

The definition of Services includes water, foul water and surface water, and the definition of Service Apparatus includes sewers, drains, channels, pipes, water courses, gutters and ducts.

Both parties are under contract to purchase and sell the Property respectively using the form of Transfer agreed attached to the Agreement for Sale they have entered into including the rights as detailed above.

If you need any further information please do not hesitate to contact Felicity Marshall on the above details.

Yours faithfully



**Blake Morgan LLP**

